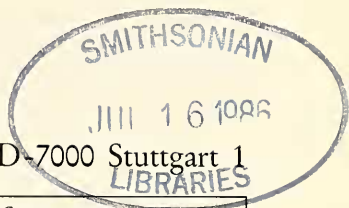


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## Reclassification of three Species of Iranian Braconinae (Hymenoptera) described by HEDWIG and TELENGA

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With 9 figures

### Summary

Two new combinations and one new name are reported for Iranian Braconinae: *Rhadinobracon nigrocephalus* (Hedwig) **comb. nov.** (= *Pseudovipio nigrocephalus* Hedwig); *R. zarudnyi* (Telenga) **comb. nov.** (= *Heliobracon zarudnyi* Telenga); *Iphiaulax iranicus* **nom. nov.** (= *Rhytimorpha mirabilis* Hedwig).

Since *H. zarudnyi* is the type species of *Heliobracon* Telenga, 1936; this genus is a junior synonym of *Rhadinobracon* Szépligeti, 1906. Some new characters are provided to aid the identification of *Rhadinobracon*, *Pseudovipio* and of *Merinotus*; features of *Rhytimorpha* and of *Iphiaulax* are illustrated. The relationships of *Rhadinobracon* and of *Rhytimorpha* are discussed briefly.

### Zusammenfassung

Bei 3 iranischen Braconinae-Arten werden 2 neue Kombinationen und ein neuer Name aufgestellt: *Rhadinobracon nigrocephalus* (Hedwig) **comb. nov.** (= *Pseudovipio nigrocephalus* Hedwig), *Rhadinobracon zarudnyi* (Telenga) **comb. nov.** (= *Heliobracon zarudnyi* Telenga), *Iphiaulax iranicus* **nom. nov.** (= *Rhytimorpha mirabilis* Hedwig).

Da *Heliobracon zarudnyi* die Typus-Art der Gattung *Heliobracon* Telenga, 1936 ist, wird dieser Gattungsname zum jüngeren Synonym von *Rhadinobracon* Szépligeti, 1906 erklärt. Einige neue Unterscheidungsmerkmale erleichtern die Trennung der Gattungen *Rhadinobracon*, *Pseudovipio* und *Merinotus* einerseits, *Rhytimorpha* und *Iphiaulax* (diese mit Abbildungen) andererseits. Die taxonomischen Beziehungen zwischen *Rhadinobracon* und *Rhytimorpha* werden diskutiert.

### 1. Introduction

Interest in the classification of the Braconinae has recently started to increase, with the result that many species which, in the past, were placed in the wrong genera, have now

been reclassified (BALTAZAR 1969, VAN ACHTERBERG 1980a, QUICKE 1981, 1983a) and several generic synonymies revealed (BALTAZAR 1961, VAN ACHTERBERG 1982, QUICKE 1981, 1982, 1983b, 1984). Following the examination of the types of a number of braconids described by HEDWIG (1957, 1961) from Iran and Afghanistan, VAN ACHTERBERG (1980a) reclassified several species and reported a number of new specific synonymies.

I have recently had the opportunity to examine the type specimens of two further species of Braconinae from the State Museum of Natural History, Stuttgart (Staatl. Museum für Naturkunde in Stuttgart) described by HEDWIG (1957), neither of which are currently placed in the correct genera. Accordingly, one new combination and one new name are published here together with notes to aid the identification of the genera involved. Further, consideration of the original description and good original habitus illustration of *Heliobracon zarudnyi* Telenga also described from Iran (TELENGA 1936) clearly shows it to belong to *Rhadinobracon* Szépligeti as does one of the HEDWIG species. Thus since *Heliobracon zarudnyi* is the type species of *Heliobracon* Telenga, the latter becomes a junior synonym of *Rhadinobracon*.

Terminology follows that of VAN ACHTERBERG (1979). Figures are shaded as if illuminated from the top right.

## 5. Reclassification of species and notes on genera

### 2.1. *Rhadinobracon nigrocephalus* (Hedwig) **comb. nov.**

*Pseudovipio nigrocephalus* Hedwig, 1957: 114, fig. 4.

*Vipio nigrocephalus* Shenefelt, 1978: 1854.

*Pseudovipio* Szépligeti is not a synonym of *Isomecus* Kriechbaumer (= *Vipio* auct.; see VAN ACHTERBERG 1982) instead being more closely related to *Iphiaulax* Foerster. HEDWIG probably placed this species in *Pseudovipio* on the basis of the short marginal cell of the fore wing. However, this is probably a common derived feature of the Braconidae, *Pseudovipio* and *Rhadinobracon* being abundantly distinct and not closely related (see below).

### 2.2. *Rhadinobracon zarudnyi* (Telenga) **comb. nov.**

*Heliobracon zarudnyi* Telenga, 1936: 72, 323.

Since *H. zarudnyi* is the type species of *Heliobracon* Telenga, 1936 this genus therefore becomes a junior synonym of *Rhadinobracon* Szépligeti, 1906.

### 2.3. Taxonomic position of *Rhadinobracon*

*Rhadinobracon* and *Pseudovipio* may be distinguished as follows:

<i>Rhadinobracon</i>	<i>Pseudovipio</i>
1.) Terminal flagellomere blunt and strongly laterally compressed	— Terminal flagellomere pointed, not compressed
2.) Scapus cylindrical, longer apico-medially and apico-ventrally than apico-laterally and apico-dorsally, flaring slightly apically	— Scapus simple, sub-globose, weakly apico-laterally emarginate, about as long ventrally as dorsally
3.) Angle between fore wing veins C+SC+R and 1-SR less than 50°	— Angle between veins C+SC+R and 1-SR greater than 55°

*Rhadinobracon*

- 4.) Hind margin of propodeum smooth
- 5.) 2nd metasomal tergite with a large, usually smooth, mid-basal, triangular area and a pair of apically converging carinae (fig. 8 in QUICKE 1982)

*Pseudovipio*

- Hind margin of propodeum crenulate
- Tergite 2 of metasoma with no mid-basal area, but also with a pair of large, triangular antero-lateral ones rather than carinae.

*Rhadinobracon* has often in the past been confused with *Merinotus* Szépligeti and synonymy suggested by SHENEFELT (1978); however, although closely related, they are abundantly distinct (see below). Whereas *Merinotus* is entirely confined to the Afrotropical Region, *Rhadinobracon* extends into the Palearctic (Morocco, Israel, Yemen, Socotra, Iran) and the Indo-Australian (S. India) Regions.

The two genera *Rhadinobracon* and *Merinotus* differ as follows:

*Rhadinobracon*

- 1.) 2nd submarginal cell of fore wing short, distally expanded, vein 3-SR distinctly sigmoid
- 2.) Vein 1-SR+M very slightly sigmoid, curving towards the wing tip after arising from 1-SR and 1-M
- 3.) Terminal flagellomere strongly laterally compressed

*Merinotus*

- 2nd submarginal cell long, more or less parallel-sided, vein 3-SR only weakly curved
- Vein 1-SR+M strongly arched towards the posterior margin of the fore wing after arising from 1-SR and 1-M
- Terminal flagellomere blunt but not or rarely marginally compressed.

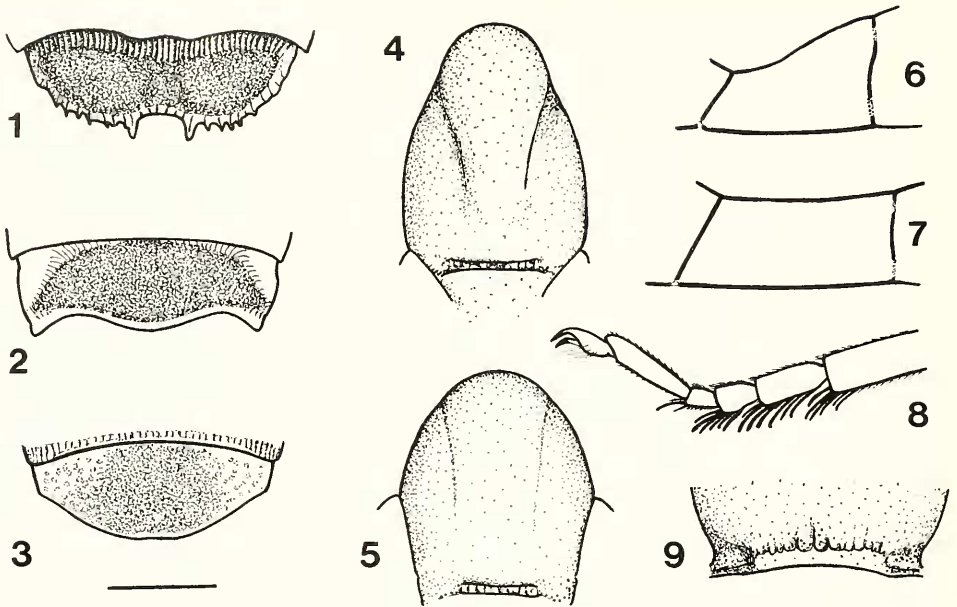
The strongly compressed terminal flagellomere, cylindrical scapus, short marginal and submarginal cells of fore wing and a more or less straight vein 1-SR+M suggest an affinity between *Rhadinobracon* and *Victoroviella* Tobias, a genus which is known only from Turkmenia (an SSR bordering the north-east of Iran). Importantly, apart from the shape of vein 1-SR+M, the above characters are probably derived. However, *Victoroviella* displays a number of apparently unique apomorphous features (see VAN ACHTERBERG 1983 for a well illustrated re-description) making assessment of its systematic position difficult.

#### 2.4. *Iphiaulax iranicus* **nom. nov.**

*Rhytimorpha mirabilis* Hedwig, 1957: 113, figs. 2, 3; secondary homonym of *Iphiaulax mirabilis* Szépligeti, 1901.

This species was described on the basis of a single male specimen which superficially resembles a male of *Rhytimorpha* Szépligeti, especially in the form of the metasomal sculpture. Most of the genera of Braconinae have been based on female characteristics, there often being marked sexual dimorphism especially concerning features which are associated with host location and oviposition. Female *Rhytimorpha* species have the posterior margin of the 5th metasomal tergite formed into several teeth (fig. 1), whereas the males do not (fig. 3). The modified posterior metasomal margin and relatively short and robust metasoma of *Rhytimorpha* are probably adaptations to ovipositing on hosts located within hard substrates (VAN ACHTERBERG 1980b). HEDWIG may have mistaken the produced postero-lateral corners of the 5th metasomal tergite in *Iphiaulax iranicus* **nom. nov.** (fig. 2) for the teeth *Rhytimorpha* females.

Males and females of these two genera may be separated as follows:



Figs. 1—3. Fifth metasomal tergites. — 1. *Rhytimorpha* sp. ♀, — 2. *Iphiaulax nataliensis* ♂, — 3. *Rhytimorpha* sp. ♂.  
 Figs. 4—5. Mesosoma, dorsal view. — 4. *Rhytimorpha* sp. ♂, — 5. *Iphiaulax nataliensis* ♂.  
 Figs. 6—7. Second submarginal cell of right wing. — 6. *Rhytimorpha* sp. ♂, — 7. *Iphiaulax nataliensis* ♂.  
 Fig. 8. Inner aspect of left hind tarsus of *Rhytimorpha* sp. ♂.  
 Fig. 9. Posterior margin of propodeum of *Rhytimorpha* sp. ♂. — Scale bar 1—7: 1.0 mm; 8: 0.5 mm; 9: 0.65 mm.

### *Rhytimorpha*

- 1.) Head cubicoid
- 2.) Notauli well developed, the middle lobe of the mesoscutum produced strongly in front of the lateral lobes (fig. 4)
- 3.) 2nd submarginal cell of fore wing short, distally expanded, vein 3—SR distinctly sigmoid (fig. 6)
- 4.) Posterior margin of propodeum crenulate (fig. 8)
- 5.) Ovipositor with a distinct nodus dorsally and well developed apico-ventral serrations (females only)
- 6.) Inner, ventral surface of 2nd and 3rd hind tarsal articles with a broad row of thickened, down-curved bristles (fig. 8) (males only)

### *Iphiaulax*

- Head usually transverse
- Notauli only weakly defined and mesoscutum evenly rounded in front (fig. 5)
- 2nd submarginal cell more or less parallel-sided (fig. 7)
- Posterior margin of propodeum smooth
- Ovipositor rather deep, without dorsal nodus and with ventral serrations absent or only weakly visible at the extreme apex (females only)
- Hind tarsi usually with such strong bristles only at the apex of the articles, and these not down-curved (males only).

*Rhytimorpha* and *Iphiaulax* are not closely related. *Rhytimorpha* shares a number of important characters with *Stenobracon* Szépligeti, *Euvipio* Szépligeti, *Bathyaulax* Szépligeti and *Ischnobracon* Baltazar:

- 1.) 2nd submarginal cell distally broadened with vein 3—SR sigmoid;



- 2.) Scapus large and globose, strongly emarginate apico-laterally and moderately emarginate apico-medially;
- 3.) Scutellar sulcus narrow and either smooth or only finely crenulate (features 1.—3. are probably derived);
- 4.) Tarsal claws slender with only poorly developed basal lobes;
- 5.) Vein cu-a of fore wing usually distinctly postfurcal in females (characters 4.—5. are probably primitive);
- 6.) Frons more or less flat with a well developed frontal suture (doubtful state).

In common with *Euvipio* and *Bathyaulax*, *Rhytimorpha* is primarily Afrotropical, a record from Egypt (see SHENEFELT 1978) needs confirmation but is quite likely to be proved correct. If the above inter-generic relationships are valid, then the short metasoma of *Rhytimorpha* which contrasts sharply with the elongate ones of the other four genera, probably reflects a marked change in host range or micro-habitat.

### 3. Acknowledgements

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